

**REMARKS**Status and Disposition of Claims

This Amendment is responsive to the Office Action mailed March 25, 2011. In the present Amendment, claims 1-12 and 14-25 are pending, claims 1-6, 10-12, 15-23 are under consideration, and claims 7-9 and 14 are withdrawn as directed to a non-elected invention.

With this Amendment, Applicants amend claim 1 and add new claims 24-25. Applicants submit that new claims 24 and 25 relate to the elected subject matter, and therefore consideration of these claims with claims 1-6, 10-12, and 15-23 is proper and requested. Support for the amendment to claim 1 finds support throughout the specification and claims as filed, including, for example, in paragraphs [0024] and [0026]. For example, lines 20-23 of page 41 (paragraph [0024]) disclose a supporting porous membrane having continuous pores with an average pore size of between 1 and 100  $\mu\text{m}$ . As another example, paragraph [0026] on page 46 (top) discloses that "...when a non-woven fabric has a thickness of 200  $\mu\text{m}$  for example, the mass per unit area thereof is preferably between 10 and 200  $\text{g}/\text{m}^2$ , more preferably between 15 and 150  $\text{g}/\text{m}^2$ , and further more preferably between 20 and 100  $\text{g}/\text{m}^2$ " (emphasis added). Such disclosure provides support for a porous membrane having a density of 0.1 to 0.5  $\text{g}/\text{cm}^3$  at least because density ( $\text{g}/\text{cm}^3$ ) may be obtained by determining the mass per unit area ( $\text{g}/\text{m}^2$ )/thickness ( $\mu\text{m}$ ). Thus,

(mass/unit area)/thickness = density, or

$$[20\text{-}100\ (\text{g}/\text{m}^2) \times 10^{-4}] / [200\ (\mu\text{m}) \times 10^{-4}] = 0.1\text{-}0.5\ \text{g}/\text{cm}^3.$$

Support for new claim 24 may be found, for example, in paragraph [0025] on page 43.

Support for new claim 25 may be found, for example, in paragraph [0026] on page 45, lines 17-18.

No new matter has been added.

Information Disclosure Statements

Applicants again respectfully note that a Supplemental Information Disclosure statement was filed July 14, 2006, but that the Examiner's consideration of this IDS does not appear to be reflected in the record. *Applicants respectfully request that the Examiner indicate such consideration in the next official communication.*

Restriction Requirement

The Office Action maintains the withdrawal of claims 7-9 and 14 as directed to a non-elected invention. Applicants allow claims 7-9 and 14 to remain pending, as they are subject to possible rejoinder.

Claim Rejections – 35 U.S.C. § 112, Second Paragraph

The Office Action rejects claims 1-6, 10-12, and 15-23 under 35 U.S.C. § 112, second paragraph, as indefinite. In particular, the rejection alleges that, with respect to claim 1, it is unclear how the larger pores of the porous membrane can be observed through the smaller pores of the supporting porous membrane when viewed through a microscope.

In response, Applicants respectfully disagree. Nevertheless, and without acquiescing to the propriety of the rejection, Applicants submit that the rejection is rendered moot by the present amendment. Applicants therefore respectfully request reconsideration of the rejection under 35 U.S.C. § 112, second paragraph, and withdrawal of the same.

Claim Rejections – 35 U.S.C. § 103

The Office Action rejects claims 1-6 and 17-23 under 35 U.S.C. § 103 as allegedly obvious over JP 2003-149096, to Tanaka et al. (hereinafter “Tanaka”) in view of U.S. Patent No. 6,280,791, to Meyering et al. (hereinafter “Meyering”). The Office Action also rejects claims 10-12 over Tanaka in view of Meyering, and further in view of U.S. Patent No. 6,645,388, to Sheikh-Ali (hereinafter “Sheikh-Ali”). The Office Action further rejects claims 15 and 16 over U.S. Patent No. 5,665,596, to Mussi (hereinafter “Mussi”), in view of Tanaka and Meyering.

In response, Applicants respectfully traverse. In particular, Applicants submit that substantial differences exist between the cited art and the claimed subject matter.

For example, Applicants submit that the claimed subject matter is directed, *inter alia*, to a composite porous membrane, which comprises at least one porous membrane comprising an organic polymer and at least one supporting porous membrane adjacent thereto. The at least one supporting porous membrane has, for example, continuous pores with an average pore diameter of 1 to 100  $\mu\text{m}$ , and a density of 0.1 to 0.5  $\text{g}/\text{cm}^3$ . The supporting porous membrane may, optionally, consist of nonwoven fabric having a fiber diameter of 0.1 to 50  $\mu\text{m}$  (see, e.g., claim 25). Applicants submit that the cited documents, either alone or in combination, fail to teach or suggest such a composite porous membrane comprising a supporting porous membrane as claimed.

Applicants further note that advantages of the claimed supporting porous membrane are described in the specification. For example, the supporting porous membrane comprising crude continuous pores combines low filtration resistance with appropriate strength (see, e.g., paragraph [0026] at the bottom of page 44).

As another example, the specification discloses that when the composite porous membrane of the present invention is used as a filtration membrane, the supporting porous membrane can function to support and reinforce the porous membrane and to impart sufficient mechanical strength to the composite porous membrane without impairing the filtration rate (see, e.g., paragraph [0024] on page 41). In this regard, Applicants note that claims 10-12, for example, are directed, *inter alia*, to a leukocyte removal filter device comprising one or more composite porous membranes having at least one supporting porous membrane with continuous pores, an average pore diameter of 1 to 100  $\mu\text{m}$ , and a density of 0.1 to 0.5  $\text{g}/\text{cm}^3$ .

As yet another example of an advantage of the claimed supporting porous membrane, the specification discloses that when the composite porous membrane is used as a cell culture diaphragm, the supporting porous membrane has mechanical strength (see, e.g., paragraph [0024] on page 41). Further, in some cases the supporting porous membrane may function as a scaffolding for cultured cells. *Id.* Moreover, the supporting porous membrane has a pore size

which allows cells to move therein. *Id.* In this regard, Applicants note that claims 15-16, for example, are directed, *inter alia*, to a cell co-culture device comprising a cell culture diaphragm having a composite porous membrane, including a supporting porous membrane as claimed in claim 1.

In view of the foregoing, Applicants submit that the claimed subject matter is not obvious over any combination of Tanaka, Meyering, Mussi, and/or Sheikh-Ali. Accordingly, Applicants respectfully request reconsideration and withdrawal of these rejections under 35 U.S.C. § 103(a).

### Conclusion

In view of the foregoing remarks and amendments, Applicants respectfully request withdrawal of the rejections of record and allowance of the claims. If the Examiner has any questions or wishes to discuss this application further, the Examiner is invited to telephone the undersigned at the below-listed telephone number.

The Patent and Trademark Office is hereby authorized to charge Deposit Account No. 19-0089 any fee necessary to ensure consideration of this paper.

Respectfully Submitted,  
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